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ABSTRACT

This study examined the availability and utility of negative feedback provided in the context of task-based adult conversations between native speakers and non-native speakers. Subjects were 10 dyads each consisting of a native English speaker and a college-level student of English as a Second Language. Analysis of conversational interactions involving problem-solving tasks revealed that negative feedback in the form of negotiation and recasts was relatively infrequent in these conditions. Further analysis indicated that provision of negative feedback was highly contingent on the information value of the utterance, as determined by the function that the error utterance served in the overall discourse structure of the conversation. While some indication of immediate and non-immediate incorporation of recast was observed, the rather low incorporation rate coupled with low rates of provision of negative feedback suggest that recasts provided in untutored, task-based settings may not be sufficient to drive interlanguage development toward greater accuracy. It is suggested that activities with predominant meaning focus, but with added focus on form, may be needed to draw learners' attention to form and facilitate interlanguage development. (Contains 35 references.) (MSE)

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Negative Feedback in Adult NS-NNS Task-based Conversation

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ABSTRACT

This paper examines the availability and utility of negative feedback provided in the context of task-based adult NS-NNS conversations. The analysis of the conversational interactions revealed that negative feedback (negotiation and recasts) was relatively infrequent in these task conditions. A further analysis indicated that provision of negative feedback is highly contingent upon the information value of the utterance, as determined by the function that the error utterance serves in the overall discourse structure of the conversation. While some indication of immediate and non-immediate incorporation of recast was observed in the present study, the rather low incorporation rate, coupled with the low rates of provision of negative feedback, suggest that recasts that are provided in untutored, task-based settings may not be sufficient to drive interlanguage development toward greater accuracy. It is suggested that activities with predominant meaning focus, but with added focus on form, may be needed to draw the learners' attention to form and facilitate their IL development.

INTRODUCTION

It has been claimed that conversational interaction provides an ideal context in which learners can develop their competence in the target language. In her review of the relevant literature regarding how conversational interaction contributes to language acquisition, Pica (1992) argues that 'negotiation' arising from conversational interaction has much to contribute to language acquisition by providing learners with (1) L2 input adjusted or modified for their better comprehension; (2) feedback on the semantic and structural features of their interlanguage (IL); and (3) opportunities to adjust or modify their IL semantically and structurally. While evidence in favor of the facilitative role played by interaction has accumulated over the past decade (see Ellis, 1991, 1994; Larsen-Freeman & Long, 1991; Long, 1996; Pica, 1992, 1994, for a review), the issue is far from being settled. As Pica (1994) suggests, answers to whether and how interaction contributes to language acquisition still await further research. The study reported in this article focuses on one aspect of conversational interaction that has been considered to be beneficial for SLA, namely, that of feedback. Specifically, it will report on the findings of a study which investigated whether and to what extent negative feedback is provided in adult NS-NNS interaction as they engage in problem-solving tasks and whether negative feedback, particularly in the form of recasts, affects the learners' subsequent use of the target language.

Feedback in Language Acquisition

The role of feedback in language acquisition has attracted attention of both primary-language (L1) and second-language (L2) researchers. Its contribution to language acquisition, however, is not yet fully understood. Despite the intuitive appeal held by the claim that feedback plays a positive role in language acquisition, it has long been assumed that feedback has only a minimal (or even negligible) role to play in language acquisition. Such an assumption was most frequently based on the findings of Brown and Hanlon (1970) who reported that parents reacted to the truth value of the children's utterances and not to their well-formedness. The results of this

study, as well as some anecdotal evidence indicating children's failure to respond to parental corrections (e.g., McNeill, 1966), have been frequently taken to indicate that negative feedback is neither available nor useful to language learners and thus should not be a plausible means by which language is acquired.

More recently, however, several L1 researchers have challenged this assumption and its underlying evidence by broadening the definitional scope of what constitutes negative feedback and investigated whether more implicit forms of negative feedback are available (Bohannon, et al., 1990; Bohannon & Stanowicz, 1988; Demetras, et al., 1986; Farrar, 1992; Hirsh-Pasek, et al., 1984). These studies showed that while overt forms of corrections are rare in adult input toward children, more subtle, implicit forms of negative feedback are available. For example, studies by Demetras, et al. (1986) and Hirsh-Pasek, et al. (1984) found that although explicit approval and disapproval was unrelated to well-formedness of children's utterances, there are distributional differences in adult responses to child utterances depending on whether the child's utterances are well-formed or not. That is, verbatim parental repetitions almost always followed children's grammatical utterances, whereas repetitions that changed some aspects of the children's utterance (i.e., recasts and expansions) tended to follow ungrammatical utterances (e.g., Child: *daddy house*; Mother: *Daddy's house*--from Demetras, et al., 1986: 291). Bohannon and Stanowicz (1988) also found that both parents and other adults reacted differentially to grammatical and ungrammatical utterances from children: 90% of the exact repetitions followed grammatical utterances, and 70% of the recasts and expansions followed ungrammatical utterances. Similar results were also obtained by Farrar (1992).

Collectively, all these studies indicate that negative feedback is at least available to children, not as explicit corrections, but in more implicit, subtle forms, such as recasts, clarifications, and expansions (for refutation of these claims, see Gordon, 1990; Grimshaw & Pinker, 1989; Marcus, 1993, among others). Not only has it been shown that negative feedback is available, some studies have also indicated that such feedback is usable and useful (Baker & Nelson, 1984; Bohannon &

Stanowicz, 1988; Farrar, 1990, 1992; Nelson, 1977; Nelson, et al., 1984). Bohannon and Stanowicz (1988) and Farrar (1992), for example, found that children were at least 2 to 3 times more likely to imitate an adult recast correction than other forms of positive evidence, thus, suggesting that children are indeed responding to the feedback component of recasts. Nelson, et al. (1984), in their longitudinal study, showed that maternal recasts of their children's utterances at 1;10 positively correlated with their children's MLU, longest utterance, verb complexity and auxiliaries per verb utterance scores five months later. This study was later followed up by an experimental study reported in Baker and Nelson (1984), who found that recasting more strongly facilitated the acquisition and use of passives and auxiliaries than did simple modeling. In a study of naturalistic mother-child interaction, Farrar (1990) also showed that the reformulation component of recasts was uniquely responsible for facilitating the acquisition of plurals and present progressives. He suggested that recasts may be particularly effective in isolating a morpheme as a distinct unit, since they immediately provide a contrast between the child's original utterance missing the morpheme and the recast utterance, making the morpheme more perceptually salient. These studies lend support to the claim that recasting is a powerful conversational means for enhancing the child's attention to and analysis of to-be-acquired linguistic forms. In particular, the reformulation component of recasts is believed to assist children in learning new language forms by allowing for cognitive comparison between the child's own utterance and the adults' recast forms (Nelson, 1987).

L2 researchers have also been actively involved in investigation of the issue of negative feedback. Early SLA studies investigated error correction in NS-NNS discourse in natural, untutored environments and reported that NS correction of the NNS errors is not frequent (e.g., Chun, et al., 1982; Day, et al., 1984). It is possible, however, that the type of tasks in which the NS and the NNS are engaged could affect the amount of feedback provided to the NNS. In other words, task demands influence the degree to which negative feedback is provided, in such a way

that if the task requires precise message exchange as a function of the task demand, more feedback may be provided to the NNS.

Such a possibility was later confirmed in a study by Crookes and Rulon (1988) of the availability and utility of corrective feedback by beginning L2 learners in three situations: one free conversation and two two-way problem-solving communication tasks. It was found that NSs provided significantly more feedback in task-related conversations than in free conversation. More recently, Oliver (1995) examined interaction patterns in child NS-NNS (age 8-13) conversations in one-way and two-way tasks. She found that NSs modified interactions for NNS peers and, in so doing, provided negative feedback in the form of negotiation (e.g., clarification requests, confirmation checks) and recasts. Her study indicated that the cases in which negative feedback was provided are far more frequent (61%) than cases in which it was not (39%), suggesting that pre-adolescent NSs respond differentially to the grammaticality and ambiguity of their NNS peers' conversational contributions.

Given that negative feedback is available for L2 learners, however inconsistently and ambiguously in some cases, an important question to be addressed is whether it is actually noticed and utilized by the learner. Crookes and Rulon's (1988) study found that a significantly greater proportion of errors was incorporated into the subsequent NNS utterances in a problem-solving task. Oliver's (1995) study also revealed that negative feedback was utilized by the child NNSs, as measured by the incorporation of the recast items into their immediately subsequent utterances. When the analysis focused only on those instances where it was possible and appropriate for the NNSs to incorporate recast elements into their immediately subsequent utterances, it was found that NNSs incorporated about 35% of the recasts. Since Oliver's study involved children at the ages of 8 through 13, it would be interesting to replicate her study with adult subjects to see whether the same degree of availability and efficacy of negative feedback may be confirmed for them in similar situations.

The study reported in this article was conducted in an effort to contribute to this line of research by addressing the issues of the availability and utility of negative feedback in the context of task-based conversations between adult NSs and NNSs. In addition to the more orthodox analyses of negative feedback (e.g., quantifying the total occurrences of negative feedback, and measuring the effects of recasts by examining the rate of immediate incorporation of recasts), two types of analyses were conducted, which added to the uniqueness of the current study. First, previous studies have focused only on the immediate incorporation of recasts. However, although the immediate incorporation can suggest the learners' sensitivity to the NS feedback, it is ambiguous whether such immediate incorporation means only momentary repetition on the part of the learner or whether it is indicative of the initial uptake that can also affect subsequent learner productions. Thus, in the present study non-immediate (in later turns) incorporation, as well as immediate incorporation (in an immediate turn), of recasts will be examined to shed greater light on the effect of recasts on the learners' productions. Another feature of this study is an investigation of the relationship between discourse structure of the task and the occurrence of negative feedback. Previous studies of negative feedback have tended to focus solely on the total quantity of negative feedback provided, with little or no attention paid to where in the overall discourse structure of the task negative feedback is likely to be provided. However, in light of SLA studies (e.g., Ehrlich, Avery, and Yorio, 1989) which show that the discourse structure of the task can affect the density and intensity of the negotiation (see later sections for more discussion), it would be of great interest to examine how a discourse-sensitive analysis of the interaction data can shed light on the issue of negative feedback. Thus, three research questions are central to the investigation reported here:

1. Do adult NSs provide negative feedback to adult NNS interlocutors while completing problem-solving tasks?
2. If they do, do NNSs incorporate negative feedback in the form of recasts into their immediate and/or non-immediate subsequent utterances?

3. What are the relationships among the different types of discourse functions an utterance serves in the task and the occurrence of negative feedback in the interaction?

THE STUDY

Data

10 NS-NNS conversations as they engaged in problem-solving tasks were analyzed in this study. These conversations were part of the corpus originally collected for an earlier study investigating the effects of conversational interaction in SLA (Doughty, 1996, in press).[1] NNS subjects were all members of a class in preacademic ESL at an American university. NS volunteers were recruited for participation in this study via announcements in classes and through e-mail. These subjects were assigned randomly to form NS-NNS dyads. In the course of the original study, subjects completed three tasks, with two tasks carried out on the first day and the third task one week later. In the first task, the NS gave directions to the NNS so that he/she could assemble a jumbo jet (see below). In the second and third tasks, the NNS gave the directions and the NS assembled the trains. The data base of the current study derives from the transcripts of the second and third tasks. The data from the first task was not used since NNS responses to and comprehension of NS speech as the NS gave directions, which were addressed in the original study, were not focused in the current study. The original study also involved dyads assigned to non-interaction conditions as well as interaction conditions in all tasks. Only those involved in interaction conditions were examined in the current study, since only interaction conditions permitted opportunities for negative feedback to be provided. Five conversations taken from the second and third tasks respectively were analyzed separately in this study, constituting the total of ten NS-NNS conversations analyzed.

Tasks

Three tasks used for the original study were developed using color photocopies taken from the book *Incredible Cross Sections* by Stephen Bietsy (1992). The first task involved a picture of a jumbo jet in cross-section. The second task, also shown in cross-section, used a picture of a steam train, containing such pieces as the steam engine, first, second, and third class cars, a dining car, and a kitchen. Pictures of people sitting, cooking, a hat lying on the rack, and the like were also cut out from these sections of the train. Care was taken to ensure that the pieces cut out were all in the same shape so that the shape alone could not be the clue to where to place these pieces. This second task was done immediately after the first task. The third task, conducted one week later, also involved the same steam train pieces used for the second task, but they were rearranged into a different 'crazy' train which did not resemble in any way the normal train used for the second task. All subjects were notified in advance that the train would look very different this time.

For each task, the direction giver had the complete photograph of the plane or the trains, as well as a photocopy of what puzzle pieces looked like to give some point of orientation for giving directions. The task doer received only puzzle-like pieces of the plane or the trains which could physically fit together in many different ways. All the tasks were conducted in the language laboratory, with each subject wearing headphones through which they could communicate with their partner clearly and without interference from other dyads. Screens were set up around workspaces so that partners, as well as other dyads, could not see each other's work. Subjects were given 40 minutes to complete each task, and most of them were able to finish within the time limit. Recorded interactions were subsequently transcribed, and the transcriptions were cross checked by another researcher. For the purpose of the present study, the second and third tasks used in the original study, which were examined in the present study, will hereafter be referred to as 'task one' and 'task two' respectively.

Analysis

The coding scheme used by Oliver (1995) was adopted for the analyses of the NS provision of negative feedback and the NNS's immediate incorporation of the feedback in this study. The reasons for the adoption are as follows. First, Oliver's coding scheme allows for the examination of feedback in the forms of both negotiation and recasts, which are of particular interest in the present study. Second, the use of the same coding scheme makes it possible to more or less directly compare the two studies since they will be analytically comparable to each other. In this coding scheme, interactions were coded as consisting of three parts: NNS initial turns, NS response, and NNS reaction. These three-part exchanges occur cyclically in that the NNS reaction constitutes the NNS initial turn of the next three-part exchange. Using this coding, nine interaction patterns were then identified, which are presented in the Appendix with examples taken from the transcripts. Each part of the three-part exchanges was coded as follows.

1) NNS initial turns: This was coded as 'correct,' 'incorrect,' or 'incomplete.' An incomplete utterance was one that contained ellipsis or an interrupted attempt, but one which did not involve any errors. If more than one utterance was included in one turn, the turn was coded using the following hierarchical system: incorrect > incomplete > correct. In other words, if a turn contained an incorrect utterance, the whole turn was coded as an incorrect turn. If, on the other hand, a turn contained an incomplete utterance, the whole turn was coded as an incomplete turn.

2) NS response: The NS responses to the preceding NNS turn were coded as 'recast,' 'negotiate,' 'continue,' or 'ignore error.' A turn was deemed to be a recast when the NS response maintained the central meaning of the NNS utterance while reformulating its incorrect part. Negotiation included such strategies as clarification requests and confirmation checks. If negotiation involved recasting, the response was taken to be a recast. Both recasts and negotiation are considered to be instances of negative feedback. Continuation involved comments, questions, repetitions, and expansions, which were neither negotiation or recasts. If it was preceded by an NNS error turn, however, it was coded as the NS ignoring the error.

3) NNS reaction: This was coded as incorporation of recasts, or continuation of the conversation. It was decided that incorporation of recast occurred when the NNS used a previously errorful form, following recasts, in a target-language manner as presented by the NS.

In the next section, results of task one will be presented first, followed by the results of task two.[2]

AVAILABILITY AND UTILITY OF NEGATIVE FEEDBACK

Results of Task One

Table 1 presents the overall exchange patterns of NS-NNS conversation in completing task one. It indicates that while NS-NNS interacted in various ways in carrying out the task, two patterns in particular were much more frequent than others. The most common pattern of interaction was Pattern 6 (36.03%), in which the NNS made an error, which was ignored by the NS, which in turn was followed by a NNS continuation move. This type of interaction did not produce any negative feedback despite the opportunities available for it. Somewhat less frequent was Pattern 2 (30.63%), in which a NNS incomplete utterance was followed by a NS continuation move, which in turn was followed by a NNS continuation move. In other words, this interaction did not involve any apparent errors (only that sentences were not complete due to self- or other-interruption) and did not cause any communication difficulties.

[Insert Table 1 about here]

NNS Initial Turns

Table 2 presents the types of NNS initial turns. It shows that a little less than half of NNS turns (45.40%) contained errors providing opportunities for provision of negative feedback from NSs. Incomplete turns constituted a third of NNS initial turns (33.01%), followed by correct turns (21.59%). These were the turns that generally did not prompt negative feedback, although they

sometimes resulted in negotiation work due to the unclarity perceived by the NS interlocutor (i.e., Pattern 3 at 2.39% and Pattern 5 at 2.59% in Table 1).

[Insert Table 2 about here]

NS Responses

As indicated in Table 3, the most common NS response (49.62%) was simply to continue the conversation because the preceding NNS turns were either correct or incomplete, yet clear, causing no particular difficulties in communication. In the remaining 50%, the NS negotiated (10.20%), recast (4.15%), or ignored the error (36.03%), suggesting that a large proportion of error or unclear NNS turns were ignored rather than negotiated or recast by the NSs. Furthermore, when only error turns were considered (n=223), it was found that errors were much more likely to be ignored by the NSs (see Table 4). Error turns were negotiated only 13.10% of the time and were recast still less frequently, 9.99%.

[Insert Table 3 about here]

[Insert Table 4 about here]

NNS Reactions

Pattern 8 in Table 1 indicates the pattern in which NNS error turns were followed by recasts from the NS, which were then successfully incorporated by the NNS. When recasts were available to NNSs, they were successfully incorporated 23.56% of the time (i.e., Frequency of Pattern 8 divided by the combined frequencies of Patterns 7, 8, and 9). If Pattern 7 is excluded from the calculation because it did not provide the chance for the NNS to incorporate the recasts, the incorporation rate slightly goes up, to 26.39%. This indicates that the NNSs incorporated a little more than a quarter of the recasts when they were available and when it was possible to do so.

Results of Task Two

As stated earlier, task two was carried out by the same dyads one week after task one was conducted. The major difference between these two tasks was that while task one involved reassembling of a normal train, task two involved rearrangement of a crazy train which did not resemble a normal train in any way. Despite the researcher's initial prediction that task two may produce more feedback than would task one because of its less predictability of the task outcome (i.e., the placement of pieces was totally random for task two, as opposed to task one), such a prediction was not borne out. In fact, the results of task two were generally quite similar to those found for task one. As indicated in Table 5, the most common patterns of interaction were the same as in task one: Pattern 6 (36.82%), in which the NNS made an error, which was ignored by the NS, then followed by a NNS continuation move, and Pattern 2 (28.69%), in which the NNS incomplete utterance was followed by a NS continuation move, followed by a NNS continuation move.

[Insert Table 5 about here]

NNS Initial Turns

Table 6 shows that, as in the case of task one, a large proportion of NNS initial turns in task two contained errors (45.40%). Incomplete turns were the second most frequent (29.50%), followed by correct turns (24.62%). These figures were strikingly similar to those obtained for task one, suggesting that the two tasks posed roughly an equal level of difficulty for the subjects.

[Insert Table 6 about here]

NS Responses

Table 7 indicates that, as in the case of task one, the most common NS response (52.71%) was simply to continue the conversation, suggesting that no apparent communication difficulties arose because the message was error-free and clear. Next most common response of NSs was to ignore the NNS errors (36.82%), suggesting that, like task one, a large proportion of error or unclear NNS turns were ignored by the NSs. NS negotiation moves were slightly less frequent in task two (5.09%) than in task one (10.20%), and recasts were as infrequent in task two (5.39%) as in task one (4.15%). When only error turns were considered (n=302), it was confirmed that NSs ignored NNS errors much more frequently than negotiated or recast them (see Table 8). Error turns were negotiated only 8.49% of the time and were recast 11.64% of the time. Together, negative feedback was provided only about 20% of the time when NNS errors occurred.

[Insert Table 7 about here]

[Insert Table 8 about here]

NNS Reactions

Pattern 8 in Table 5 indicates the pattern of interaction where NS recasts of NNS errors were successfully incorporated by the NNS. Recasts, when available, were incorporated by NNSs 21% of the time. If Pattern 7 is excluded from the calculation since it did not provide an opportunity for the NNS to incorporate the recasts, the incorporation rate becomes a little less than 25%. The overall similarities between task one and task two in terms of NNS initial turns, NS response patterns, and the rate at which recasts were incorporated into subsequent NNS utterances, give us certain amount of confidence with regard to the comparability of the two tasks and the robustness of the results obtained from these tasks.

Despite the relatively low rates of provision and incorporation of recasts in both tasks, it is still possible that the effect of recast can be observed in non-immediate contexts. A specific question posed here was whether errors that were recast were less likely to recur in subsequent NNS utterances. This analysis was conducted by first identifying a key word or words contained in the error in question.[3] Those key words were then searched in the portion of the transcript following the occurrence of the recasts in order to examine whether the same error recurred after the recast or whether it was now correctly used.[4] The analysis was conducted separately for cases where the recasts were immediately incorporated and where they were not, in order to examine possible differences in these two types of cases. Four patterns were identified in this analysis: subsequent to recasts, A) only correct forms appeared and no error forms reappeared, B) no correct forms appeared and only error forms reappeared, C) both correct forms and error forms appeared, and D) neither correct forms nor error forms appeared. Of particular interest here are patterns A and B, since the former indicates a positive effect of recasts while the latter indicates no effect. Patterns C and D are more problematic for interpretation. Pattern C is ambiguous in that it may indicate either that no learning took place or that learning was taking place through recasting although the learner still continued to use two different forms, correct and incorrect, for some reason. Pattern D may indicate that there simply was no opportunity for the same form to reappear elsewhere in the task. Table 9 shows the results of this analysis.

[Insert Table 9 about here]

Interestingly, when incorporation of recasts was observed, only correct forms were used and no error forms reappeared 60% of the time (pattern A), and only error forms reappeared and no correct forms were used less than 7% of the time (pattern B). In contrast, when incorporation of recasts was not observed, no error forms reappeared and correct forms were used only about 20% of the time (pattern A), and more than 30% of the time only error forms reappeared and no correct

forms were found (pattern B). This suggests that positive effect of recasts is not limited to immediately after their occurrence; the recast forms were produced by the NNS subjects in non-immediate contexts as well. The data also suggests that the non-immediate effect of recasts was much more likely observed when recasts were immediately incorporated into the NNS utterances than when they were not.

DISCOURSE STRUCTURE OF THE TASK AND PROVISION OF NEGATIVE FEEDBACK

The finding reported earlier regarding the low rate of provision of negative feedback is somewhat puzzling particularly in light of previous research which indicated that task conditions stimulate much negotiation work between interlocutors. This makes all the more important the investigation of the third research question which addressed the possible relationship between different types of discourse functions an utterance serves in the task and the occurrence of negative feedback in the interaction. In analyzing the results of this study closely, it became clearer that the NSs' provision of negative feedback was not random. Specifically, the NSs in this study appeared to be employing some strategies of focusing their attention on specific information. In fact, despite the task directions which specified that the task doer listen carefully and follow the directions given by the direction giver indicating what pieces of the train had to be placed in what areas, the NS task doers did not often have to attend to NNS directions very carefully in completing the task. Instead they appeared to be concentrating on words and phrases that they thought were crucial for them in carrying out the task. This NSs' selective attention appears to have allowed them to carry out the task without getting bogged down in intensive negotiation work. Such an instance is illustrated in the following example:

(1) *NNS*
The guy showering he's going above-

NS
Where does the guy showering go?

What?

The guy showering he's go above the the people who are eating.

Oh. ABOVE them.

Yes. Above them.

OK.

In this example, the NS requested for a specific response from the NNS concerning where to place a particular piece. As such, he focused his attention on the location word (i.e., *above*) and did not bother to provide feedback to the NNS error *he's go* contained in his second utterance.

As this example shows, the NSs' focus on specific information in completing the task appears to have resulted in ignoring other parts of the NNS utterances regardless of whether they contained an error or not. Consequently, when errors occurred while the NNS was giving directions, the NS did not bother to provide any feedback to what they might have considered to be non-crucial or redundant information. Instead, the NS preferred to continue the conversation in such cases. This suggests that the occurrence of feedback is highly contingent upon the information value of the utterance as determined by the NS interlocutor; if it is deemed important, some kind of feedback may be given to make sure that the NS properly understood it, and if it is not deemed crucial, it is simply ignored regardless of whether the utterance is correctly formulated or not.

Such a variable focus of participants in problem-solving tasks has also been suggested by other researchers. Ehrlich, Avery, and Yorio (1989) showed that negotiations of meaning are not uniform throughout a discourse in the context of a picture-description task. In their study, two types of strategies were first identified in the production of direction-giving narratives: a skeletonizing strategy in which only the bare events of a narrative are provided, and an embroidering strategy in which events are described with a greater amount of expansion and embellishment. Of these two strategies, skeletonizers tended to abandon negotiation of meaning once there was a non-understanding. They did so most frequently when they strayed to deeply embedded parts of discourse (i.e., details of the narrative). When discussing a salient, identifying element in a discourse, however, these same speakers were much less likely to abandon

negotiation of meaning despite several overt indications of non-understanding on the part of the NNS. Embroiderers, on the other hand, were more likely to continue to negotiate meaning after a communication breakdown regardless of how deeply embedded their discourse became. As a result, they often encountered difficulty in repairing non-understandings that were deeply embedded in discourse. Interestingly, skeletonizing pairs scored much higher on overall task success than the embroidering pairs did. That is, too much negotiation of meaning of detailed features was found to be less effective in terms of successful task completion for NS-NNS dyads. This suggests that adopting skeletonizing strategy seems to be a better choice if one is concerned with task success and efficiency.

If the analysis of Ehrlich, et al. is applied to the results obtained in the present study, it may be that the skeletonizing strategy was adopted by most NS interlocutors for their comprehension. This, in turn, may have resulted in the NSs providing less negative feedback. To substantiate this claim, an analysis was conducted using the discourse framework developed by Ehrlich, et al. (1989). This framework was originally developed to account for the discourse of a picture-drawing task in which the direction giver provides directions to the task doer as to how and where to draw certain objects. Three constituents of the discourse were identified: identification, description, and orientation (location). In conducting a picture-drawing task, the direction giver first specifies where the piece under discussion should be located in the overall picture (e.g., 'then the next one is...'), identifies it by providing a label (e.g., 'it's like a sunflower'), and describe what the piece looks like by providing details (e.g., 'Okay, first there's a circle'). This framework was adopted for the analysis of the discourse in the current study, since these three constituents were also found to be present in the train-assembly task. In conducting the task whose aim is to assemble an object from separate pieces, the direction giver often identifies the piece under discussion by providing a label (e.g., 'engineer piece'), describes what it looks like by providing descriptive details (e.g., 'the man wears a blue jacket and a hat'), and specifies where the piece should be located in the overall picture and in relation to other pieces (e.g., 'it comes next to the first class car'). The order of the

three constituents may not necessarily be fixed, as orientation (location) may be provided before identification and description (e.g., 'To the right of this piece is a man taking a shower'), although identification usually preceded description.

A basic intuition derived from this framework is that, if the occurrence of negative feedback is contingent upon the information value of the utterance, more negative feedback is expected to occur when the information provided is crucial for the execution of the task than when it is not. To be more specific, information provided by the direction giver that pertains to identification and location should be considered crucial for the task execution and thus should be likely to prompt negative feedback. However, information pertaining to the description is often not so crucial particularly if the NS has already successfully identified the piece with information provided in the identification. For example, once the piece identified as an 'engineer piece' is found, the descriptive information such as 'the man wears a blue jacket and a hat' would be considered extra information, and as such, may be easily ignored by the NS interlocutors. The importance of information attributed to identification and location as opposed to somewhat decreased importance of description is a characteristic of a task that utilizes visual information that is available for both interlocutors.[5]

Using this discourse framework, the analysis examined error treatment patterns by the NS (i.e., negotiate, recast, or ignore) in relation to the discourse functions of the information under discussion (i.e., identification, location, and description). The analysis was conducted separately for task one and task two. The following procedures were followed in this analysis. First, each NNS error utterance was coded as pertaining to identification, location, or description of the relevant piece. When the NNS error utterance did not serve any of the above discourse functions (e.g., organizational or procedural remarks, such as 'Are you finished?'), it was coded as 'other.'[6] NNS error utterances were then tallied according to which discourse function they served. After the NNS error utterances were coded, NS responses to the NNS error turns were examined to determine whether NNS errors received any negative feedback in the form of recast or negotiation.

Then, the number of NNS error utterances of each discourse function that received different NS responses was tallied. The percentage figure was also computed for each discourse function that received different NS responses to see what proportion of error utterances of each discourse function actually received negative feedback.[7]

Results of Task One

Table 10 shows the relationship between NNS error utterances serving different discourse functions and NS responses for task one. It can be seen that there was a proportional difference in the type of NS responses depending on which discourse function the NNS error utterance serves. While most common NS responses are to ignore errors for all three discourse functions (which is consistent with the findings reported above), NSs tended to ignore NNS errors more frequently when errors occurred in utterances serving a description function (90%) than they did in utterances serving identification (65%) and location (62%) functions. When errors occurred in utterances serving the identification function, they were negotiated 24% of the time and recast 11%. Identification errors, in other words, received negative feedback 35% of the time. When errors occurred in utterances serving the function of location, they were negotiated 23% and recast 15%. This means that 38% of the errors pertaining to location received negative feedback. In contrast, only about 10% of errors that occurred in utterances serving a description function received negative feedback. These results suggest that there is indeed a relationship between the NNS error utterance serving different discourse functions and the NS response patterns, with identification and location receiving more negative feedback than description.

[Insert Table 10 about here]

Results of Task Two

Table 11 displays the results of the analysis for task two. The results are quite similar to those obtained for task one. The most common response pattern for all types of error utterances was to ignore the error. However, errors which occurred in utterances serving identification and location functions received negative feedback more frequently than errors which occurred in utterances serving a description function. Identification errors were negotiated 13% of the time and recast 22% of the time, totaling 35% of identification errors receiving negative feedback. Similarly, location errors were negotiated 16% and recast 17%, totaling 33% of location errors receiving negative feedback. Description errors, on the other hand, received negative feedback only 10% of the time, with negotiation and recast occurring 5% of the time each . These results further support the hypothesis that information provided by the direction giver that pertains to identification and location tend to prompt negative feedback more than do information pertaining to description in these tasks.

[Insert Table 11 about here]

DISCUSSION

Availability of negative feedback in task-based conversations

To summarize, this study found that in performing information-gap tasks the adult NNSs and NSs interacted in various ways; however, the NSs most frequently ignored NNS errors rather than negotiated or recast them. Negative feedback was provided to NNSs less than 15% of the time in task one and a little more than 10% in task two. NNS errors were ignored by NSs more than a third of the time in both tasks. If only those turns that were clearly designated as error turns were considered, negative feedback was provided a little more than 20% of the time in both tasks (task one: 23%, and task two: 20%), while errors were ignored much more frequently (task one: 77%, and task two: 80%). These findings contrast with those reported by Oliver (1995) who investigated

child NS-NNS interactions in task conditions. Her results indicated that more than a third (37%) of the total interactions involved negative feedback, and this figure increased to 61% when only error turns were considered (i.e., errors were ignored 39% of the time). Thus, while the cases where negative feedback was provided in Oliver's study were much more frequent than cases when it was not, the pattern is completely opposite in the current study.

Why was negative feedback so infrequent in the current study? Part of the answer seems to lie in how the NS interlocutors approached the tasks. NS interlocutors seems to have used a strategy of carefully attending to information that was deemed crucial for the completion of the task while ignoring information that was deemed less crucial. This observation was generally confirmed by the examination of the error treatment patterns by the NSs in relation to the discourse functions that error utterances served in the tasks. In other words, negative feedback was provided more frequently when errors occurred in utterances serving the discourse functions of identification and location (which were deemed crucial) than when error utterances served the discourse function of description (which was less crucial). Taken together, errors pertaining to identification and location received negative feedback about 35% of the time, as opposed to errors pertaining to description, which prompted negative feedback only about 10 % of the time. Some illustrative examples are provided below.

Examples (2) and (3) show instances where NNS error utterances pertaining to identification were negotiated and recast by the NS interlocutors, respectively. In (2), the NNS utterance contains a word *baba* which is a mispronunciation of the word 'barber.' In response to this utterance, the NS attempted to negotiate by saying *And a what?*, which was followed by a repetition of the original utterance *Baba*. A NS recast move then follows this second error utterance.

(2) *NNS*
In this part you will see a [baba] room.

[Baba].

NS

And a what?

Uh a barber.

Yeah. You will see the word "XXX salon" on the window.

In (3), the NNS utterance *cook* was recast by the NS as *cooks*. The NNS repeated her original utterance without incorporating the recast and continued the conversation.

(3) *NNS*
They are cook.

Yeah cook. One of them is cooking.

NS

Cooks.

In both (2) and (3), the NNS utterances containing errors relate to the identification (initial labeling) of the pieces, and the NSs provided negative feedback while attempting to clarify what the pieces under discussion were.

Examples in (4) and (5) show cases where the NNS error utterances pertaining to location were negotiated and recast by the NSs, respectively. In (4), the NNS utterance *Put it near on the right*, which pertains to where the piece should be placed, appeared to be perceived by the NS as ambiguous. Thus, the NS tried to negotiate it by asking *What do you mean near on the right?* This response then triggered a reformulation of the original utterance by the NNS.

(4) *NNS*
Yes the third wheel. Put it near on the right.

Put near the piece you put right now.

NS

Near on the right. What do you mean near on the right?

In (5), the NNS utterance *in the topper* was recast by the NS, which in turn prompted a confirmation response by the NNS.

(5) *NNS*
You should put one wheel in the topper.

NS

One on the top?

Yeah it is a half wheel.

In contrast to the NNS utterances relating to identification and location, NNS error utterances pertaining to description were more likely ignored by the NSs. For example, in (6), there was an error involving the choice of the verb *follow*, as well as its agreement with the subject; however, these errors were completely ignored by the NS.

(6) *NNS*	*NS*
Water follow down?	
	Yes. OK.
Yeah.	
	All right. That's in place.

Prior to the exchange in (6), the NNS had already identified the piece under discussion as *water part*, which appeared to be understood by the NS interlocutor as seen in his affirming response *yes*. In this sense, the NNS error utterance in (6) only provided redundant descriptive information, so the NS only acknowledged it by saying *Yes OK*. The next turn by the NS also shows that the task at hand was satisfactorily completed despite the NNS error.

Similarly, in (7), despite the error contained in the NNS utterance *many hole*, it did not prompt negative feedback from the NS, who instead asked a question relating to where the piece should be placed. Again, the piece under discussion had already been identified by the NNS as *fire box* prior to this exchange.

(7) *NNS*	*NS*
It has the many hole.	
	Next to the Scotsman?
Yeah next Scotsman	

In sum, both the quantitative analysis and qualitative examination of the exchange patterns provide some support for the claim that the occurrence of negative feedback is contingent upon the information status of utterances as determined by their discourse functions. However, it should be

noted that many errors still did not receive negative feedback regardless of their discourse functions. This suggests that other factors are also involved in determining when negative feedback is provided. One such factor seems to be related to the visual support available to the interlocutors (i.e., train pieces they had in front of them). The visual support generally seems to have facilitated the task completion, but, at the same time, often obviated the need for careful verbal exchange. Consider (8) in this regard.

(8) *NNS*	*NS*
OK behind them you have two other people one woman and two mans reading two newspaper.	
	Is the lady listening to something?
The lady yes she's listening she got a XXX (inaudible)	
	She got like headphones on?
Yes. A headphones on. OK.	

In (11), since the NS was presumably looking at the picture of a woman with headphones on, he was able to ask a specific question regarding whether she was listening to something. Moreover, even though the NNS's second turn contained an inaudible utterance, the visual support available to the NS made it possible to correctly infer that the NNS meant headphones. Notice that in these exchanges the NS attention was focused on the woman, and the incorrect forms *two mans* and *two newspaper* were completely ignored. Thus, the NS strategy of highly selective attention to linguistic input and maximum utilization of visual support appear to have resulted in the overall decrease of careful verbal exchange, which, in turn, reduced the amount of negative feedback provided.[8] In terms of task designs, the results of this study suggest that future construction of pedagogical tasks can benefit from closer analyses of the discourse structure of the task and how it affects the frequency and intensity of negotiation arising in the task. Such analyses would be particularly useful if the task is to have many opportunities of focus on form arising in a most natural manner. A further investigation of the effects of visual support on negotiation would also be worthwhile.

Utility of negative feedback in task-based conversations

While negative feedback was relatively infrequently provided in these tasks, it is still possible that, where it was available, it affected the L2 learners' subsequent productions. The examination of both tasks one and two revealed that learners incorporated recasts into their immediately subsequent utterances about a quarter of the time when it was possible to do so. The analysis of non-immediate incorporation of recasts revealed that when recasts were immediately incorporated into subsequent NNS turns, they were correctly used later 60% of the time. Even when incorporation of recasts was not observed, no error forms reappeared and correct (i.e., recast) forms were used about 20% of the time. While we should be cautious in interpreting these results due to the small sample size available for this analysis, the significant distributional differences between the immediate incorporation of recasts and the subsequent correct vs. incorrect use of the recast elements suggest that the immediate incorporation reflects not merely the learners' repetition of the recast form, but their potential influence on the learners' subsequent productions. This is a positive finding for the use of the immediate incorporation as a measure of the effect of recasts, in that the immediate incorporation seems to serve as a good predictor of the learners' subsequent use of recast features. On the other hand, the finding that recast elements also turned up later, albeit relatively few in number, even when the immediate incorporation was not observed suggests that the immediate-incorporation analysis fails to capture potential effects of recasts in non-immediate contexts. In this sense, the analysis of non-immediate incorporation seems to be an important methodological addition to the sole use of the immediate-incorporation analysis.[9]

While some indication of immediate and non-immediate incorporation of recasts was observed in this study, the incorporation rate of about 25% was not as large as had been expected (cf. compare this figure with that obtained in Oliver's study for her child L2 subjects: 35%). There are at least two possible explanations for this. First, despite the care taken in constructing the tasks, the tasks were too demanding for the learners' current level of L2 proficiency. The learners may, therefore, be unable to allocate enough attentional resources to form (though it should be noted that

these learners were still more or less successful in completing the tasks). Second, it may be that unassisted negotiation which arises from task demands alone is not as conducive to improving learner accuracy as may have been believed. It is possible that tasks, given their primacy of meaning and task completion, do not guarantee automatic sensitivity to form (Skehan, 1996). Whatever the precise reasons are, the low rates of incorporation of recasts, along with the low rates of provision of negative feedback, found in this study raise some concern for making strong claims about the positive role of recasts in untutored, task-based settings. Rather, the findings of this study suggest that more active approaches of focused pedagogical intervention may be necessary to overcome the somewhat haphazard and hit-or-miss approach of unaided negotiation.

A useful alternative may be found in Long's (1991; Long & Robinson, 1998) recommendation of *focus on form* which aims to integrate simultaneous attention to form and meaning. Focus on form refers to how focal attention is allocated to formal features in the language during a meaning-focused activities. As such, it often consists of "an occasional shift of attention to linguistic code features--by the teacher and/or one or more students--triggered by perceived problems with comprehension or production" (Long & Robinson, 1998: 23). Important to the notion of focus on form is that learner attention should be drawn to form *as* they engage in meaningful language use. Otherwise, one would risk the danger of compromising fluency, or worse, isolating form from essential meaning it conveys, making it difficult to establish the necessary form-meaning connections (see Doughty & Williams, 1998, for detailed discussion on various issues involved in focus on form)

A recent study by Doughty and Varela (1998) offers one example of how focus on form can be successfully incorporated into negotiated interactions for greater effects on acquisition. Doughty and Varela used focused corrective recasting as a focus-on-form technique and implemented it in an ESL content-based science class. In their study, the past time reference in the reporting of science experiments was focused on, in such a way that every time the learner made an error in the targeted form, the teacher repeated the error with rising intonation and then provided a

corrective recast. No further comments were given, and no other errors were corrected during the experimental period. Such focused corrective recasts were provided whether the students were working individually, in groups or in class as a whole. A parallel form of feedback was also given on all written work by circling the error and providing the written recast. The results indicated that the experimental group which received focused corrective recasts significantly improved in their accuracy of their use of past time reference, whereas the control group which had followed the regular science curriculum without any pedagogical intervention on the use of past time reference did not show any measurable change in the use of the targeted form. These results show that, first, a focus on form technique can be unobtrusively incorporated into meaningful lessons, and second, it can be highly successful in improving learner accuracy. Thus, integrated focus on form seems to be an attractive avenue to take to complement unaided negotiation.

CONCLUSION

This study investigated the availability and utility of negative feedback in task-based conversations between adult NSs and NNSs. The major findings of the study are: a) the problem-solving tasks used in this study did not provide numerous opportunities for negative feedback to be provided; b) this was caused in part by the NSs' highly selective attention to the linguistic input provided by the NNSs, the strategy of which was found to be closely related to the information status of the utterances in the task; and c) while some indication of immediate and non-immediate incorporation of recast was observed in the present study, the rather low incorporation rates suggest that recasts provided in untutored, task-based settings may not be sufficient to drive interlanguage development toward greater accuracy. It was suggested that activities with predominant meaning focus, but with added focus on form, may be needed to draw the learners' attention to form and facilitate their IL development. In this respect, the finding of this study indicating the importance of the information structure of the task in differentially stimulating provision of negative feedback may be useful for the future construction of effective pedagogical

tasks. The challenge for the task designer then is to create situations in which focus on form can be naturally incorporated at various points in the overall discourse structure of the task.

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APPENDIX

Interaction Patterns

NNS	*NS*
Continue	
Pattern 1	
CORRECT: There's somebody showering.	
	CONTINUE: OK.
CONTINUE: And after that...	
Pattern 2	
INCOMPLETE: I don't know if I explain exactly but it's-	
	CONTINUE: No that's fine.
CONTINUE: Yeah.	
Negotiate	
Pattern 3	
INCOMPLETE: Yeah. next right.	
	NEGOTIATE: Next to the man reading?
CONTINUE: Yeah.	
Pattern 4	
ERROR: Four three two picture is next to right side.	
	NEGOTIATE: to the what?
CONTINUE: Right side. there is a letter R.	
Pattern 5	
CORRECT: You have a waiter with a cake.	
	NEGOTIATE: A waiter with a cake?
CONTINUE: Yes.	
Ignore	
Pattern 6	
ERROR: There are five people sit their chair.	
	IGNORE ERROR: OK I have it.
CONTINUE: They are watching the movie.	
Recast	
Pattern 7	
ERROR: He read newspaper.	
	RECAST & CONTINUE: He's reading. OK but he's next to the four?
Pattern 8	
ERROR: You have a like a one pictures	
	RECAST: One picture.
INCORPORATE RECAST: Yes one picture.	
Pattern 9	
ERROR: Above the kitchen room don't have a room.	
	RECAST: There's no room above the kitchen.
DOESN'T INCORPORATE RECAST: Yeah.	

Table 1. Exchange patterns--Task 1 (n=529)

	Continue		Negotiate			Ignore	Recast		
Pattern Type	1	2	3	4	5	6	7	8	9
M (%)	19.00	30.63	2.39	5.22	2.59	36.03	.30	.98	2.88
SD	9.61	17.05	2.28	3.15	1.81	15.32	.67	.93	1.09

Table 2. NNS initial turns--Task 1

	Correct	Incomplete	Error
M (%)	21.59	33.01	45.40
SD	10.11	16.69	16.47

Table 3. NS responses--Task 1

	Continue	Negotiate	Recast	Ignore error
M (%)	49.62	10.20	4.15	36.03
SD	18.26	6.25	1.44	15.32

Table 4. NS responses to NNS errors--Task 1

	Negotiate	Recast	Ignore
M (%)	13.10	9.99	76.95
SD	8.49	3.87	9.48

Table 5. Exchange patterns--Task 2 (n=680)

	Continue		Negotiate			Ignore	Recast		
Pattern Type	1	2	3	4	5	6	7	8	9
M (%)	24.02	28.69	.80	3.68	.60	36.82	.80	1.13	3.46
SD	14.87	7.68	.86	2.13	1.02	14.75	1.10	1.27	2.68

Table 6. NNS initial turns--Task 2

	Correct	Incomplete	Error
M (%)	24.62	29.50	45.88
SD	15.56	8.02	18.07

Table 7. NS responses--Task 2

	Continue	Negotiate	Recast	Ignore error
M (%)	52.71	5.09	5.39	36.82
SD	17.46	2.39	3.23	14.75

Table 8. NS responses to NNS errors--Task 2

	Negotiate	Recast	Ignore
M (%)	8.49	11.64	79.87
SD	4.34	5.18	7.61

Table 9. Patterns of correct and incorrect use of recast forms by the NNSs

	Pattern A	Pattern B	Pattern C	Pattern D
when recasts were immediately incorporated (n=15)	9 (60.00)*	1 (6.67)	2 (13.33)	3 (20.00)
when the recasts were not immediately incorporated (n=44)	9 (20.45)	14 (31.82)	10 (22.73)	11 (25.00)

Note: Pattern A: only correct forms appeared and no error forms reappeared; Pattern B: no correct forms appeared and only error forms reappeared; Pattern C: both correct forms and error forms appeared; and Pattern D: neither correct forms nor error forms appeared.

*Numbers in parentheses indicate percentages of each pattern for each condition (when recasts were immediately incorporated and when they were not).

$\chi^2 = 9.12$; $p = .0277$.

Table 10. NNS error utterance serving different discourse functions and NS response in Task 1

	Identification	Location	Description
Negotiate	17 (23.61)*	15 (22.73)	7 (6.03)
Recast	8 (11.11)	10 (15.15)	5 (4.31)
Ignore	47 (65.28)	41 (62.12)	104 (89.66)

*Numbers in parentheses indicate percentages of each NS response type out of the total number of NNS error utterances serving each discourse function.

$\chi^2 = 23.66$; $p = .0001$.

Table 11. NNS error utterance serving different discourse functions and NS response in Task 2

	Identification	Location	Description
Negotiate	12 (13.19)*	15 (15.79)	5 (5.15)
Recast	20 (21.98)	16 (16.84)	5 (5.15)
Ignored	59 (64.84)	64 (67.37)	87 (89.69)

*Numbers in parentheses indicate percentages of each NS response type out of the total number of NNS error utterances serving each discourse function.

$\chi^2 = 19.75$; $p = .0006$.

NOTES

[1] Doughty's study and the present study share certain similarities: Both investigated the effects of conversational interactions on SLA processes. However, the focuses of these studies are different: While the former focused on the effects of negotiated interaction on comprehension and production, the latter specifically focused on the effects of interaction in providing negative feedback and how it was responded to by NNS subjects.

[2] After training, a second rater coded 20% of the sample. The percentage agreement obtained indicates high interrater reliability: (1) NNS initial turn = 96%, (2) NS response = 97%, and (3) NNS reaction = 99%.

[3] For example, in the following exchange the key word was determined to be ***rider***, as it is an error of lexical choice and it was recast by the NS interlocutor.

NNS It's like the rider of the train.
NS The driver of the train?

If an error pertains to a syntactic or morphological form, the particular item that was made an error of was identified as the key word, rather than identifying the whole group of the form (e.g., *-ing*). For instance, in the following exchange, the verb ***read*** was determined to be the key word, as it is produced in the wrong form in the context by the NNS and recast in its correct progressive form by the NS interlocutor. The search was then made as to whether this verb was used as ***read*** or *is/are reading* in similar grammatical contexts.

NNS He read newspaper.
NS He's reading.

[4] Note that the instances of immediate incorporation of recasts were not included in the calculation for the analysis of non-immediate effects of recasts.

[5] The importance attributed to description is somewhat different in the case of the picture-drawing task used by Ehrlich, et al., because in their study only the direction giver had the picture and the task doer had to rely on descriptive information provided by the direction giver to draw various objects. In contrast, when both interlocutors share the same pictures (even if one has a complete picture, whereas the other has separate pieces), the availability of

pictures may obviate the need for and usefulness of detailed description.

[6] In task 1, there were 19 NNS error utterances coded as 'others.' Among them, only one instance was recast, whereas all the other errors were ignored by the NSs. In task 2, there were 57 NNS error utterances identified as 'others.' One instance each was recast and negotiated, while all the others were ignored by the NSs. Since this category did not serve any of the three discourse functions that were under focus in this study, its results will not be discussed any further in this article.

[7] After training, a second rater coded 20% of the sample. The agreement percentage obtained for the coding of error utterances into different discourse functions they served was 90%, which was determined to be acceptably high.

[8] A reduced need for extended negotiated interaction due to the availability of visual support is also discussed by Crookes and Rulon (1985, 1988), who found fewer instances of negative feedback in conducting a two-way 'spot the difference' task, as compared with an 'odd man out' task which did not utilize any visual support.

[9] While the analysis of non-immediate incorporation may be useful in assessing how recasts provided in interactions affect the learners' subsequent language performance, a question can be raised as to whether it indicates acquisition. Two aspects of the analysis of both immediate and non-immediate incorporation are limiting in this respect: (1) the uncertainty regarding the nature of errors committed by NNSs (e.g., wrong hypotheses vs. slips of the tongue), and (2) a question regarding whether the initial uptake--immediate or subsequent--leads to restructuring of the IL grammar. Furthermore, uncertainty remains as to whether recasts which are not incorporated into the learners' subsequent utterances are completely ignored (i.e., the learners notices the recast, but does not incorporate it for some reason?). To overcome these limitations, it will be necessary to employ a pretest-posttest design, or carry out longitudinal studies. Introspective measures (e.g., interviews with the learner after the completion of the task) may also be useful to ascertain learners' perception of what they think they learned through the task. These are clearly issues to be addressed in future research.